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## USE OF WASTE IN A VITREOUS COATING FOR BRICK

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Research was carried out on decorating silicate brick with a vitreous coating using cullet of window-pane and container glass, including stained cullet, as the raw material. A decorative vitreous coating was produced that adheres well to the brick surface (its adhesion strength is 0.06–0.08 MPa).

One way of improving the consumer properties of brick is its decoration with a vitreous coating. There are several technologies for formation of a vitreous coating on the surface of silicate brick [1] (USSR Inv. Certif. No. 1513779).

We continued research in this field, and cullet of window-pane and container glass was proposed as the material for coating formation. The production technology for vitreous coatings based on cullet consisted in the following.

Preliminarily washed cullet was crushed to a particle size of not more than 10 mm and poured on a brick surface as a uniform layer. Fusing of the cullet was performed by a standard flame burner using acetylene gas as the fuel. To decrease thermal stresses, the treated brick was heat-insulated, thus reducing the possibility of crackle in the coating.

The vitreous coating attaches well to the silicate brick surface (the adhesion strength is 0.06–0.08 MPa). The coating is water-resistant, durable, and environmentally safe.

Depending on the thickness of the deposited layer and its fractional composition, it is possible to obtain vitreous coatings in the form of thin films or films up to 10 mm thick or more. To obtain thin vitreous-coating films, cullet with the following content should be used (here and elsewhere, in wt.%): 20.0–50.0 fraction 2–3 mm, 50.0–80.0 fraction below 2 mm. In producing a 5–7-mm-thick coating, good results were obtained when using cullet in which the content of the fractions 7–10, 5–7, 3–5, 2–3, and below 2 mm amounted to 20% each. A vitreous coating of thickness

10 mm or more can be produced by using cullet of large-sized fractions, for example, of the following composition (%): 20.0–50.0 fraction 7–10 mm, 20.0–30.0 fraction 5–7 mm, and 20.0–30.0 fraction 3–5 mm.

The consumption of cullet constitutes 0.5 to 5 kg/m<sup>2</sup> of silicate brick surface.

Thus, by varying the thickness of the cullet layer, it is possible to produce a volume coating, which is essential in the creation of decorative wall panels.

A unique artistic effect can be accomplished in using cullet that is separated not only into fractions, but also by color. For instance, use of cullet of coarse fractions and a particular color in combination with clear or differently colored cullet of fine fractions produces an effect of color spots or dots.

It should be noted that silicate brick can be covered by a vitreous coating not only under factory conditions but also directly at the construction site. The treatment of brick can be carried out at both positive and negative (down to –10°C) temperatures of the ambient medium.

The coatings, especially ones based on tinted glass, have a decorative effect, which makes it possible to use silicate brick treated in this way for interior decoration of public and industrial buildings.

### REFERENCES

1. V. F. Chernykh, *Wall and Facing Materials* [in Russian], Rosagropromizdat, Moscow (1991).

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